REPORT NO. INT 229

CAPE TOWN BROWN HAZE STUDY

SUMMARY OF PUBLICITY

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1. INTRODUCTION

The Cape Town Brown Haze has received considerable media attention over the past few years. Until the release of the results of the Brown Haze Study by the Energy Research Institute most of the material was speculative, as indicated by the attached media clippings (those before 30 September 1997).

2. BROWN HAZE PRESS RELEASE

On 30 September 1997 the Energy Research Institute held a press meeting after which a press release was distributed (English and Afrikaans versions attached). The press meeting was attended by:

Cape Argus
Cape Times
Die Burger
Earthyear
Newsflash
SAFM
SATV News
Sibongile

In addition, press releases were faxed to:

Cape Business News
Cape Chamber of Commerce
Cape Community Newspapers (Athlone News, Atlantic Sun, Constantiaberg Bulletin, Pinelands Post, SS Tatler, The Plainsman, Tyger Talk)
Clean Air Journal
Environmental Justice Network Forum
Finance Week Cape Bureau
Financial Mail Cape Bureau
Finansies and Tegniek
KFM News
Milnerton Mail
Parliamentary Research unit
Rapport Cape Bureau
SAPA
SATV 50/50
Sunday Times
Tygerburger

An interview was screened on SATV that night and interviews were broadcast on two radio stations over the next few days. So far presentations have also been made to the Cape Metropolitan Council and the Cape Town Municipality.

3. PROFESSIONAL COMMUNICATION

Technical papers are being drafted for the following:

- Atmospheric Environment Journal
- South African Journal of Energy
- World Clean Air and Environment Congress

4. INFORMATION DISSEMINATION

2000 copies of a brochure outlining the findings of the Brown Haze Study were printed and have been distributed to:

- All 400 members of the National Association for Clean Air
- Local and national environmental organisations
- Local authorities
- Main libraries in the Cape Metropole
- Miscellaneous individuals and organisations
- Various government departments
- Various interested individuals and organisations abroad

Over 60 copies of the main report have been distributed to:

- Board Members of the Energy Research Institute
- Interested organisations abroad
- Miscellaneous organisations
- Tertiary education departments
- The Brown Haze Steering Committee
- The Cape Metropolitan Council and Municipalities
- The Minister and Director-General of Environmental Affairs and Tourism
- The Minister and Director-General of Minerals and Energy
- The National Association for Clean Air
- The Western Cape Minister of Economics and Environment

Over 20 copies of the brown haze video have been distributed to:

- Miscellaneous organisations
- SATV 50/50
- Some local municipalities
- Sponsors of the study
- Tertiary education departments
- The Cape Metropolitan Council
- The National Association for Clean Air

ATTENTION.....

PRESS RELEASE 30 SEPT 1997 (6 PAGES TOTAL)

RESULTS OF CAPE TOWN'S BROWN HAZE STUDY

The major source of the Cape Metropolitan area's brown haze problem is vehicles which are the cause of 65% of the brown haze according to results released today of the comprehensive scientific Brown Haze Study undertaken over the past two years by the Energy Research Institute of the University of Cape Town.

The report identified where and when the haze occurs, what causes the haze and to what degree each source is responsible for the problem.

It recommends action steps that should be taken in the short and long term to improve the quality of air in the Cape Metropolitan area and estimates the future scenario for Cape Town if these steps are not taken.

CAUSES

The results of the study also show that:

* Diesel vehicles are the main source responsible for almost half of the major source of the haze due to their high emission rate of small particles.

* Industry, particularly those industries that emit pollutants at low height, is responsible for 22% of the brown haze.

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* Wood burning from domestic fires contributes 11% to the brown haze.

* Natural sources - wind-blown dust and sea salt - contribute very little towards the brown haze.

The report says that small particles are the single largest cause of the visible brown haze and that these can be harmful to human health. Because of this the main focus of the study was to quantify small particle contributions made to the brown haze by major air polluters.

OCCURRENCE

Over a year from July 1995 to June 1996 the brown haze was sampled at sites in the City Hall,Goodwood, Tableview and Wynberg in the Cape Metropolitan area. A single sample was also taken at Guguletu.

Filters were analysed to produce a "chemical fingerprint" of the brown haze itself as well as the "chemical fingerfrint" of major air polluters.

The report indicates that the intensity and causes of the brown haze vary with time and location due to the different meteorological conditions in various parts of Cape Town and uneven distribution of the sources.

The haze occurs mostly from April to September when strong temperature inversions combined with windless conditions prevent air pollutants from dispersing upwards or out to sea, leading to the build-up of pollutants emitted into the atmosphere.

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AREA OF POLLUTION

The haze extends over most of the Cape Metropolitan area and is normally most intense in the morning, lifting and dispersing later in the day.

Results show that:

* The brown haze is usually very intense for only a few hours. Hourly internationally accepted air pollution health standards are therefore sometimes exceeded, but daily and annual health guidelines are rarely exceeded.

* The brown haze is most intense at Goodwood, followed by the City Centre where pollution from motor vehicles was more significant than elsewhere.

*A less intense haze was measured at Tableview where the "chemical fingerprint" showed that industry played a more significant role.

* At Guguletu, wood burning was more significant than at any other sites.

FUTURE SCENARIO

Based on projections of vehicle, population and industrial growth in Cape Town, the report estimated that if nothing is done about the brown haze, then the intensity of the brown haze will increase by 48%, and health standards will be exceeded with increasing frequency over the next decade.

This scenario is unacceptable for Cape Town. Effort needs to be urgently directed at improving air quality through both immediate planning and long-term action.

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RECOMMENDATIONS

In order of priority, the report recommends that immediate action should be focused on diesel vehicles, petrol vehicles and industry.

Legislation already exists covering black smoke emissions from diesel vehicles and industry, but proper enforcement of this legislation will be needed to significantly reduce air pollution from the worst offenders.

The report notes that smoking petrol vehicles emit much more pollution than well maintained petrol vehicles, so efforts should be directed at eliminating smoking petrol vehicles.

In the longer term, consideration should be given to improved diesel, petrol and fuel oil formulation in order to reduce emissions.

The report notes that responsibility for managing Cape Town's air quality lies primarily with the Municipal Health Services of the Cape Metropolitan Council, but that at present this department has neither the manpower, resources nor influence to adequately enforce current legislation. Nor can the Department adequately examine air quality data, nor ensure that air quality is optimally integrated within metropolitan planning.

The report warns that unless these shortcomings are addressed immediately, little improvement in air quality control can be expected.

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IMMEDIATE ACTION

Immediate action is recommended in the report as follows:

* Enforce the diesel black smoke legislation.

* Introduce measures to reduce the number of smoking petrol vehicles.

* Enforce the industrial black smoke legislation.

* Initiate discussions with the oil industry about improving fuel quality.

* Initiate the upgrading of air pollution control capacity of the Cape Metropolitan Council.

* Initiate the development of an air quality management system for Cape Town.

* Re-assess existing national air pollution legislation, since much of it is outdated.

LONGER TERM RECOMMENDATIONS

In the longer term, the report recommends that:

* An air quality management programme needs to be developed for Cape Town. At the heart of the programme should be an ongoing process of planning, implementing and assessing emission reduction measures.

* Medium and long term air quality targets should be set, and revised periodically.

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* The programme should include setting relevant ambient air quality standards, development and upgrading of an accurate emissions inventory, improving the air quality monitoring system, as well as increasing public awareness.

* An immediate start should be made on developing an integrated air quality management programme.

BACKGROUND TO THE REPORT

Cape Town's brown haze problem has been of increasing concern over recent years because of its impact on Cape Town's natural beauty and its potential effects on health.

In 1992 a pilot project indicated that the problem was complex and a major study was required to determine the causes of the brown haze.

The Cape Town Brown Haze Study was initiated in 1995, funded by local municipalities, industry and the national government.

The study was carried out by the Energy Research Institute of the University of Cape Town which has been involved with environmental research for over three decades.

ends

ISSUED BY THE ENERGY RESEARCH INSTITUTE, UCT
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Energy Research Institute
UNIVERSITY OF CAPE TOWN

MEDIAVERKLARING

30 September 1997 rookmis een

BEVINDINGE VAN DIE KAAPSTADSE BRUIN ROOKMISSTUDIE

Voertuie is die vernaamste bron van die 'bruin' rookmis in die Kaapse metropolitaanse gebied en veroorsaak 65 persent daarvan. Dit is die bevinding van die omvattende wetenskaplike Bruin Rookmisstudie wat oor die afgelope twee jaar deur die Energie Navorsingsinstituut aan die Universiteit van Kaapstad onderneem is.

Die verslag het geïdentifiseer waar en wanneer die rookmis voorkom, die oorsaak daarvan, en in hoeverre elke bron daartoe bydra.

Stappe vir die kort- en die langtermyn word aanbeveel om die gehalte van die lug in die Kaapse metropolitaanse gebied te verbeter. Die verslag bevat ook die skattings van die vooruitsigte vir Kaapstad indien sodanige stappe nie geneem word nie.

OORSAKE

Die bevindinge lui as volg:

- Dieselvoertuie is die vernaamste bron en verantwoordelik vir bykans die helfte van die rookmis weens die hoë tempo van emissie van die klein deeltjies

- twee volg –

P.O. Box 207, Plumstead 7800, Cape Town, South Africa
Tel: (+27) (021) 705-0120 Fax: (+27) (021) 705-6266

Block C8, Diep River Industrial Park, Greenville Rd,
(off De Waal Road), Diep River 7800

Director: Professor R.K. Dutkiewicz

- Nywerhede, veral dié wat met uitlatings teen lae hoogte besoedel, is vir 22% van die bruin rookmis verantwoordelik
- houtverbranding vanaf huishoudelike vure dra 11% tot die bruin rookmis by
- natuurlike bronne soos stof en seesout op die wind dra in geringe mate daartoe by

Luidens die verslag is klein deeltjies die grootste enkele oorsaak van die sigbare bruin rookmis. Omdat dit 'n gevaar vir die mens se gesondheid inhou, was die studie vernaamlik op die kwantifisering van die bydrae van klein deeltjies deur die vernaamste lugbesoedelaars toegespits.

VOORKOMSSYFER

Oor 'n jaar vanaf Julie 1995 tot Junie 1996 is monsters van die bruin rookmis by persele in die Stadsaal, Goodwood, Tableview en Wynberg in die Kaapse metropolitaanse gebied geneem. 'n Enkele monster is ook by Guguletu geneem.

Filtreerders is ontleed om 'n chemiese 'vingerafdruk' van die bruin rookmis self asook die chemiese 'vingerafdrukke' van die vernaamste lugbesoedelaars te maak.

Luidens die verslag wissel die intensiteit en oorsaak van die bruin rookmis na gelang van tyd en ligging, weens die verskillende weerstoestande in verskeie dele van Kaapstad en die oneweredige verspreiding van die bronne.

- drie volg –

Die rookmis kom hoofsaaklik vanaf April tot September voor, wanneer sterk temperatuuromkerings met windstille toestande kombineer om die verspreiding van lugbesoedeling opwaarts of seewarts te verhinder, wat tot die opbou van besoedeling in die atmosfeer aanleiding gee.

DIE OMVANG VAN BESOEDELING

Die rookmis kom in die grootste deel van die Kaapse Metropolitaanse gebied voor en is gewoonlik soggens op sy digste, maar dit styg en breek later in die dag op.

Die bevindinge toon dat:

- die bruin rookmis gewoonlik vir net 'n paar uur baie dig is. Hoewel die uurlikse aanvaarbare lugbesoedelingstandaarde wel oorskry word, word daaglikse en jaarlikse gesondheidsriglyne selde oorskry.
- die bruin rookmis is op sy digste by Goodwood, gevolg deur die Stadsentrum waar besoedeling vanaf motorvoertuie meer beduidend as elders was
- 'n minder digte rookmis is by Tableview gemeet, waar die 'chemiese vingerafdruk' toon dat die nywerheid 'n meer beduidende rol speel
- by Guguletu is houtverbranding meer beduidend as by enige ander perseel

DIE TOEKOMS

Gebaseer op die verwagte groei in voertuiggetalle, bevolkingsaanwas en industriële uitbreidings in Kaapstad, word daar in die verslag beraam dat indien niks oor die bruin rookmis gedoen word nie, die digtheid daarvan met 48% sal vermeerder, en dat dit oor die volgende dekade die gesondheidsstandaarde meer dikwels sal oorskry.

- vier volg –

Hierdie vooruitsig is vir Kaapstad onaanvaarbaar. Daar moet dringende aandag geskenk word aan die verbetering van luggehalte deur beide onmiddellike beplanning en langtermynaksie.

AANBEVELINGE

In voorkeurorde word daar aanbeveel dat onmiddellike aandag op diesel- en petrolvoertuie en die nywerheid toegespits moet word.

Daar bestaan reeds wetgewing tov swart rookuitlatings vanaf dieselvoertuie en nywerhede, maar dit is nodig om hierdie wetgewing behoorlik toe te pas om die lugbesoedelingsvlakke van die ergste oortreders beduidend te verminder.

In die verslag word daarop gewys dat rokerige petrolvoertuie veel meer as goed versiende petrolvoertuie die lug besoedel; dus behoort pogings aangewend te word om rokerige petrolvoertuie uit te skakel.

In die langer termyn behoort aandag geskenk te word aan verbeterde formulerings van diesel-, petrol en brandstofolie om uitlatings te verminder.

In die verslag word daarop gewys dat die verantwoordelikheid vir die beheer van Kaapstadse luggehalte eerstens by die Munisipale Gesondheidsdienste afdeling van die Kaapse Metropolitaanse Raad berus, maar dat hierdie afdeling tans nie oor die nodige mannekrag, bronne en die invloed beskik om huidige wetgewing behoorlik toe te pas nie. Ook is dié afdeling nie in staat om luggehaltedata deeglik te ondersoek of om te verseker dat dit binne die metropolitaanse beplanningsraamwerk optimaal geïntegreer word nie.

- vyf volg –

Daar word in die verslag gewaarsku dat tensy hierdie tekortkominge onmiddellik aangepak word, min verbetering in luggehaltebeheer verwag kan word.

ONMIDDELLIKE OPTREDE

In die verslag word die volgende onmiddellike optrede aanbeveel:

- pas die wetgewing op swart rookuitlatings deur dieselvoertuie toe
- stel maatreëls in om die aantal rokerige petrolvoertuie te verminder
- pas die wetgewing op swart rookuilatings deur die nywerhede toe
- knoop besprekings met die oliebedryf aan met die oog op die verbetering van brandstofgehalte
- begin die opgradering van die lugbesoedelingsbeheervermoëns by die Kaapse Metropolitaanse Raad
- stig 'n ontwikkelingsinisiatief vir 'n luggehaltebeheerstelsel vir Kaapstad
- onderneem 'n evaluering van die huidige nasionale wetgewing op lugbesoedeling, aangesien dit meestal so verouderd is

AANBEVELINGE IN DIE LANGTERMYN

In die langtermyn word die volgende aanbevelinge in die verslag gedoen:

- 'n luggehaltebeheerprogram moet vir Kaapstad ontwikkel word. Die fokus van die program behoort die voortdurende beplanning, implementering en waardering van maatreëls gemik op die vermindering van uitlatings te wees
- doelwitte behoort in die middel- en langtermyn vir gehalte gestel en gereeld hersien te word

- slot volg –

- Die program behoort die volgende in te sluit: die instelling van toepaslike standaarde vir omgewingsluggehalte, die ontwikkeling en opgradering van 'n akkurate uitlatingsinventaris, die verbetering van die luggehalte moniteerstelsel, asook die verhoging van bewustheid onder die publiek
- Die ontwikkeling van 'n geïntegreerde luggehaltebeheerprogram behoort dadelik te begin

AGTERGRONDINLIGTING

Die kommer oor die probleem van bruin rookmis in Kaapstad het oor die afgelope jare toegeneem, weens die uitwerking daarvan op die stad se natuurlike skoonheid en die potensiële gesondheidsgevaar.

In 1992 het 'n proefprojek aangedui dat dit 'n komplekse probleem is en 'n studie is gelas om die oorsake van die bruin rookmis te bepaal.

Die Kaapstadse Bruin Rookmisstudie is in 1995 van stapel gestuur, en deur plaaslike munisipaliteite, nywerhede en die nasionale regering gefinansier.

Die studie is deur die Energie Navorsingsinstituut van die Universiteit van Kaapstad onderneem, wat die afgelope drie dekades by omgewingsnavorsing betrokke is.

- slot –

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CAPE TIMES 9-12-94

Council to fund pollution study

Municipal Reporter

THE executive committee of the City Council recommended yesterday that R19 500 should be granted in the current budgetary year, and the same amount again next year to the forthcoming phase of the anti-pollution "Project Blue Skies".

A final decision on this matter will be taken at the last monthly meeting of the council in its present form, to be held next Thursday.

The recommended amount is far less than was requested. Professor R K Dutkiewicz, director of the Energy Research Institute at UCT, which will be doing the new "brown haze" study, suggested that the council should donate R100 000 a year.

The Medical Officer of Health, Dr Michael Popkiss, recommended that R30 000 a year be spent for the two years.

Grants for 'Project Blue Skies'

He said the increasing photochemical smog problem had been extensively reported on by his department.

A pilot brown haze study was carried out by the Energy Research Institute last year, on a small budget of R30 000, which the council did not fund.

Results of this study showed it was feasible to embark on a two-year major study from April next year. All the samples will be taken and monitoring will be done in the first year.

The total cost of the study is expected to be R390 000. The Department of National Health has already donated "a substantial sum" towards this.

Dr Popkiss said that to develop appropriate air pollution controls — by by-law or higher-level legislation — it was first necessary to study where the pollutants came from, and in what quantity.

City treasurer Mr Eddie Landsberg recommended that the council's grant should be limited to 10% of the total costs.

• Yesterday's executive committee meeting was supposed to be the last one before the local government changeover, in which town and city councils will be reconstituted. The meeting continued beyond 6pm, in an effort to tie up all remaining loose ends.

Yet another special meeting of exco will have to be held on Monday, as there are still outstanding matters.

Probe into appalling city pall

Municipal Reporter

CAPETONIANS may find out what causes the brown haze over the city during winter if the amenities and health committee of the Cape Town City Council accepts a recommendation to fund a Project Blue Skies to analyse air pollution.

Yesterday medical officer of health Dr Michael Popkiss recommended the committee should contribute up to R50 000 a year towards the project.

Professor R K Dutkiewicz of UCT said it would be useful to conduct a study to identify the main sources of air pollution, and recommend appropriate control measures.

Emissions would be sampled at the oil refinery, at coal and wood fires, and at the exhausts of both petrol and diesel engines, and analysed.

A similar analysis would be made of the brown haze which sometimes hangs over the city.

The preliminary study concluded that some form of control had to be introduced before the city, "reputed to be the most beautiful in the country", is spoiled by the brown pall.

C.T. 12/7/94

City haze to be studied

Staff Reporter

CAPETONIANS may discover the cause of the brown haze that hangs over the city if a project to solve the problem gets under way next month as planned.

The Energy Research Institute at the University of Cape Town yesterday held a meeting in the city attended by local authorities, interested industries and the press, to present the proposed two-year project, for which they have already received funds from the Department of Health and have been offered a part of the estimated cost of R390 000 by the local municipality.

Professor R K Dutkiewicz of UCT said the main sources of the haze were vehicles, industry and domestic fires. The aim of the project was to pinpoint what contributed to the haze and how much the source contributed.

BUSINESS DAY 4-5-94

Cape Town plans smog control study

EDWARD WEST

CAPE TOWN — The incidence and density of photochemical smog in Cape Town was getting worse and a major study to determine appropriate control measures was planned, said the Energy Research Institute's professor Richard Dutkiewicz.

A brown pall, or haze, often hangs over the city, a result of pollutants trapped by a strong inversion layer which occurs mostly in autumn, winter and spring.

Dutkiewicz said the incidence of brown haze as measured by the city council was increasing steadily.

Monitoring had shown that the levels of nitrogen oxides increasingly exceeded international standards.

He said a pilot study was completed last year to determine ways to study the brown haze problem and to assess the competence of organisations in the Western Cape and SA to carry out such work.

Development

However, the major part of the study would take another two years to complete.

The summary of the pilot study said it was inevitable that the haze and pollutant levels would rise with increasing urban and industrial development, the increase in vehicle numbers, and rapidly expanding informal settlements.

It said some form of control would have to be introduced, bearing in mind the costs and city and regional economic development needs.

The next stage of the study was an expanded survey of the contributors to the brown haze such as industry, households and motor vehicles.

This would be carried out by sampling emissions of typical sources such as the oil refinery, coal-fired power stations, wood burning, vehicle emissions and diesel vehicle emissions.

ARGUS 26.7.94

Major initiative launched to reverse air pollution

JOHN YELD
Environment Reporter

MAJOR new initiatives have been launched to help reverse Cape Town's worsening air pollution problem, which has caused a public outcry in recent months.

The University of Cape Town's Energy Research Institute has started a "Blue Skies Over Cape Town" study of the brown haze over the metropolitan area, and the Caltex oil company has pledged to spend millions of rands on pollution-control equipment and programmes at its Milnerton refinery — the target of many complaints.

The UCT institute started its comprehensive brown haze study after receiving R90 000 from the Department of National Health.

Its recent pilot study into the problem concluded there was sufficient local expertise to make an extensive investigation worthwhile.

Director Dick Dutkiewicz said they were confident of raising the rest of the required research funds for the full study — estimated at about R300 000 — from local industries, municipalities and the Department of Environment Affairs.

According to the institute's proposal for the study, Cape Town's reputation as the country's most beautiful city is at stake because of the pall of brown haze hanging over it.

"A product of pollutants trapped by a strong inversion layer, it (the brown haze) occurs in autumn, winter and spring, and the incidence and severity of these episodes has been increasing.

"Associated with the visible smog are high levels of nitrogen oxides, sometimes reaching levels well above internationally acceptable health levels.

"It is inevitable that the haze and pollutant levels will increase with increasing urban development, with the inevitable increase in vehicle numbers, with increasing industrial development, and with the rapidly expanding informal settlements.

"Some form of control will have to be introduced ..."

The 18-month study will investigate contributions to the haze from sources such as industry, domestic households and motor vehicles, and a draft report is expected within two years.

In full newspaper advertisements at the weekend signed by chairman and managing director Mike Rademeyer, Caltex said it was "acutely aware" of its obligations regarding the "vexing" problem of air pollution.

"To reside in a pollution-free environment is indeed a right which is accorded to citizens in terms of the Constitution ...

"While there are numerous causes of poor air quality — for example, car exhaust emissions, industries and household fires — we accept that our control programme needs to be accelerated and enhanced."

Pledging a significant improvement in air quality year by year, with sulphur emissions being reduced by 80 percent during the next five years, the company said it would continue to spend millions of rands on pollution control equipment and programmes.

R400 000 study to investigate brown haze

Constantiaberg Bulletin 19.5.95

A TWO-YEAR scientific study funded by industry, municipalities and the Department of Health into Cape Town's brown haze has finally got underway.

The research is being undertaken by UCT's Energy Research Institute (ERI), assisted by a number of other organisations like the Cape Town Weather Office and the Cape Town Municipality.

The ERI is also exchanging information and co-operating with the Milnerton Air Quality Project which has been up and running for some time.

The main aim of the R400 000 study is to understand the nature of the brown haze, determine its sources and make recommendations to alleviate the problem.

From May to June this year ERI scientists will be taking samples of emissions from many suspected sources of the small particles that comprise the haze. These include an oil refinery, fertilizer production plant, coal and oil-fired boilers, petrol and diesel vehicles, uncontrolled fires, wood and tyre burning, road and soil dust and sea salt.

Simultaneously and continuing through to April 1996, sampling of the particulates in the haze will take place in the central city as well as Tableview, Goodwood and Wynberg.

Mystery haze for probe

Sunday Times 14.5.95

By JESSICA BEZUIDENHOUT

CAPE TOWN's mysterious brown haze is to be probed by scientists.

The R400 000 study is being conducted by scientists from UCT's Energy Research Institute, the Cape Town Weather Office and the Cape Town municipality.

The haze, which often extends over most of the Peninsula and the Cape Flats from April to September each year, may even have exceeded international health standards, according to ERI director Professor Richard Dutkiewicz.

It is hoped the study will provide information that will eventually help control the pollution problem, he says.

The group is collecting samples of emissions from the various suspected sources of the haze, including an oil refinery and a fertiliser plant.

"Once the cause of the haze has been identified, control measures can be identified to produce the best environmental benefits," Prof Dutkiewicz said.

Until 1980 Cape Town was one of the world's cleanest cities, but it had deteriorated markedly since then.

ARGUS 19.5.95

Call for action on smog

Political Correspondent

THE government has come under fire in the senate for its failure to take action against the smog problem in Cape Town and other cities.

Replying to the criticism, Deputy Minister of Environmental Affairs Bantu Holomisa has told the senate that a major conference is planned for next month to discuss integrated pollution control.

Metropolitan forums, like the one set up in Durban when a community complained about pollution from a refinery, should be set up, he said.

Mr Holomisa was speaking yesterday in a senate debate on photo-chemical smog.

James Selfe (DP) asked whether the Department of Environmental Affairs monitored photo-chemical smog in metropolitan areas, and whether levels of this smog in Cape Town had ever exceeded internationally accepted standards.

Mr Holomisa said monitoring was done in co-operation with local authorities.

Nitrogen dioxide and ozone concentrations exceeded accepted levels two to five times a year.

The problem, caused by Cape Town's unique topographical conditions, was being investigated.

Mr Selfe said South Africa contributed to global pollution out of proportion to the size of its population or its industrial development.

The country generated 332 tons of carbon dioxide pollutant a year.

The threat posed by photo-chemical smog was likely to increase because of the increasing number of cars which did not use lead-free petrol.

The Department of Environmental Affairs had been given power this year to set policy on preventing pollution, but the minister, Dawie de Villiers, had failed to formulate a policy.

Constantiaberg Bulletin 25-5-95

Brown haze study

A TWO-year scientific study funded by industry, municipalities and the department of Health into Cape Town's brown haze is finally underway.

The research is being undertaken by UCT's Energy Research Institute (ERI), assisted by a number of other organisations like the Cape Town Weather Office and the Cape Town Municipality.

The ERI is also exchanging information and co-operating with the Milnerton Air Quality Project which has been underway for some time.

The main aim of the R400 000 study is to understand the nature of the brown haze, determine its sources and make recommendations to alleviate it.

During this month and June ERI scientists will be taking samples of emissions from many suspected sources of the small particles that comprise the haze.

SOUTHERN SUBURBS TATLER 25.5.95

Scientific study of city's brown haze under way

A TWO-year scientific study funded by industry, municipalities and the department of Health into Cape Town's brown haze is finally underway.

The research is being undertaken by UCT's Energy Research Institute (ERI), assisted by a number of other organisations like the Cape Town Weather Office and the Cape Town Municipality.

The ERI is also exchanging information and co-operating with the Milnerton Air Quality Project which has been underway for some time.

The main aim of the R400 000 study is to understand the nature of the brown haze, determine its sources and make recommendations to alleviate it.

During this month and June ERI scientists will be taking samples of emissions from many suspected sources of the small particles that comprise the haze. These include an oil refinery, fertilizer production plant, coal and oil-fired boilers, petrol and diesel vehicles, uncontrolled fires, wood and tyre burning, road and soil dust and sea salt.

Simultaneously and continuing through to April 1996, sampling of the particulates in the haze will take place in the central city as well as Table View, Goodwood and Wynberg.

ARGUS 15/6/95

Researchers aim to throw off city's dirty brown blanket

Environment Reporter

THE first moves are underway to eliminate one of Cape Town's major environmental problems — the ugly and unhealthy brown haze that hangs over the metropolitan area like a filthy blanket on calm days.

The haze is caused by small particles in the air, and suspected sources include the oil refinery, a fertiliser production plant, coal and oil-fired boilers, petrol and diesel vehicles, uncontrolled fires, burning wood and tyres, dust from roads and soil, and sea salt.

But scientists have not been able to determine the relative contribution of each source and pollution has continued unabated since the early 80s.

Now a major two-year scientific study of the problem is underway with R400 000 funding from municipalities, industry and the Department of Health.

The research is being done by the University of Cape Town's energy research institute, under the direction of Professor Dick Dutkiewicz, with assistance from the weather office at Cape Town airport and the city council.

The institute is also exchanging information and co-operating with the Milnerton air quality project, which has been underway for some time.

This project aims to identify the sources of the brown haze, understand its chemical make-up, and make recommendations to help alleviate it.

Technically, the haze is caused by the scattering and absorption of light by small particles — commonly referred to by scientists as PM10s — and gases.

PM10s are particles with an aerodynamic diameter of less than 10 micrometers.

The haze occurs each year between about April and September under stable, windless conditions associated with temperature inversion.

Under these conditions, the pollutants are not dispersed but instead concentrate, becoming visible as a brown haze and resulting in high pollution levels.

But the chemical reaction that occurs to form the haze is not yet completely understood, Professor Dutkiewicz said.

The problem is not new to Cape Town. From 1968 the city managed to control air pollution for a decade by stopping the use of coal-burning tugs and locomotives, closing two power stations, and enforcing standards for fuel-burning appliances.

"In fact by 1980 air pollution control was so successful that Cape Town was one of the cleanest cities in the world.

"But another form of pollution — referred to by the public as brown haze — began to appear and was soon being blamed for a number of health complaints and environmental issues of growing concern to everyone.

"It's possible that, in the past, the brown haze has been responsible for exceeding the health standard set for atmospheric particles.

"We hope that the results of this new study will facilitate the measures needed to prevent this happening in the future."

Results were due by the end of next year, and should provide data to help control the pollution problem, Professor Dutkiewicz added

Burning tyres: Money for the poor – but at a price

Environment suffers as township residents eke out living

SABATA NGCAI
Staff Reporter

LACK of job opportunities has forced township residents and squatters to make money any way they can — but sometimes with dire consequences for the environment.

One of the most popular choices is burning scrap motor car and truck tyres to extract the wires, which are then sold to scrapyards.

The residents make enough money to buy food for the day. They return to do the same thing the next day to ensure their families do not go to bed with empty stomachs.

But the practice takes its toll on the environment.

The Cape Town City Council recently complained that although motor vehicles and industries were the major cause of pollution, tyre-burning in the townships also contributed significantly to air pollution.

However, residents said they had no alternative but to pollute the air if it meant making a living.

The council's pollution control officer, Hans Linde, said the tyre manufacturers should accept responsibility for manufacture and disposal of the tyres.

He said the smoke affected the health of people who inhaled it and it also affected the environment.

Whitey Ndzube of Vygieskraal squatter camp in Rylands, said he had been burning scrap tyres for the past 17 years.

He claimed to be the first person to have arrived in the squatter camp 18 years ago.

Mr Ndzube said he burnt the tyres in the evenings when people are sleeping and finished about 3 am.

"This is how I make a living, anyone who is opposed to it should give me a job," he said.

Mr Ndzube buys scrap tyres from a tyre factory. A load of 30 truck tyres makes a full load of scrap metal, which sells for R200.

Each load of scrap metal is carried by his horse-drawn carts to sell at the scrapyard.

Mr Ndzube said he worked hard to maintain his 32 family members and also helped the community when they needed help.

"I have no alternative but to burn the tyres," he said.

"It is unfortunate that my job affects nature and people's health, I can't do otherwise.

"If someone offered me a job tomorrow, I would stop burning the tyres."

Mr Ndzube said he did his job in the evenings because during the day people would inhale the smoke.

However, people still complained about the smoke. But he would rather leave the area than stop doing his job.

The land occupied by his two shacks is black with ash from the burning tyres. The grass and trees have turned black from the smoke.

In Khayelitsha, The Argus observed a group of people digging up scrap material. They said they also burnt tyres when they got hold of them. They were surrounded by scattered tyre wires.

The residents said when they could not get scrap tyres they spent time digging copper and aluminium waste material from the dump site in Site B.

They sold their pickings for between R3.80 and R6 a kilogram.

They said they also collected electric wires from the dump site which were also burnt to separate the wires from the surrounding insulation.

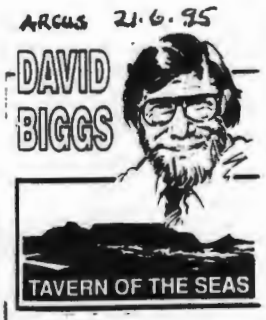
Patrick Booi, of Khayelitsha's Site B, said the scrapyard paid him R6 a kilo.

He resorted to collecting the scrap metal because he could not find another job.

Picture: B. ENTON GEACH, The Argus

DANGEROUS SMOKE: A cloud of black smoke from a burning tyre masks a South African Airways aircraft landing at Cape Town International Airport.

ARGUS 21.6.95



I WAS sailing across False Bay at the weekend, when I noticed a blanket of heavy, dark chocolate haze creeping out to sea from the Cape Flats.

By the time I was halfway across the bay the haze had covered Seal Island.

I was close enough to *hear* the island, with its barking seals and crashing surf. I could even smell it, but that's never difficult. Seals are notoriously bad about using toilet spray.

But I couldn't see it.

Rather alarming. When you're at sea you don't want to bump into anything, let alone an island full of stinky seals you can't see.

Fortunately a light breeze came up and the chocolate blanket drifted off southward. I last saw it heading resolutely towards the South Pole, where I suppose it will eventually choke a few Antarctic seals.

Chocolate haze is one of our less popular exports.

But I was interested to learn recently that UCT's Energy Research Institute, under Professor R Dutkiewicz, had been granted R400 000 to conduct a two-year research project into Cape Town's brown haze. They will try to find out what causes it and how to prevent it.

Well, from my boat I could see what was causing it. Thick brown smoke was pouring from thousands of houses all over the Cape Flats.

When you live in a draughty shack the easiest way to keep your family warm and do your cooking is to burn Port Jackson wood, which is plentiful and free.

The problem is to persuade all those people to stop burning free Port Jackson and switch to expensive electricity. This becomes even more of a problem when you realise most of those homes don't even have electricity.

If Professor Dutkiewicz and his team solve this one, it will have been the best R400 000 anybody ever spent.

PENINSULA TIMES 28.6.95

Cape smog a deadly cocktail

■ By William Smook

CAPE TOWN's wet winters and its high pollution levels could be the reason why the Mother City has one of the highest tuberculosis figures in the world, experts say.

Dr Bernard Fourie, of the Medical Research Council, says an unhealthy environment combined with air pollution would result in an increased risk of infection.

An on-going study by the MRC and the CSIR in the Vaal Triangle directly linked air pollution to respiratory infections and asthma in children.

A survey conducted in the Western Cape last year found that 6,2 per cent of deaths here were as a result of tuberculosis.

Pollution levels in Cape Town on Monday and Tuesday last week were the highest in years and were far above the acceptable levels, according to Department of Health figures.

The level of NOx (nitrogen oxide) was 2 884 - the Department of Health's acceptable level is 1 500, while the SO2 (oxides of nitrogen) stood at 423 (acceptable level 385).

Most of the pollution or brown haze is believed to be made up of SO2 and a cocktail of sea salt, dust, carbon and other substances, but studies are continuing.

Scientists believe the pollution comes from household and other fires, vehicle fumes, industry and the burning of tyres, particularly on the Cape Flats where residents melt the tyres to extract steel.

Active

Conservation ecologist at the Wildlife Society's Western Cape branch Marlene Laros says the tuberculosis bacillus is more active in smoky, damp environments such as those found on the Cape Flats in winter.

"We're shocked by a newspaper photograph of the pollution but that's nothing compared to what it's like inside a shack or house with an open fire of low-grade coal or wood.

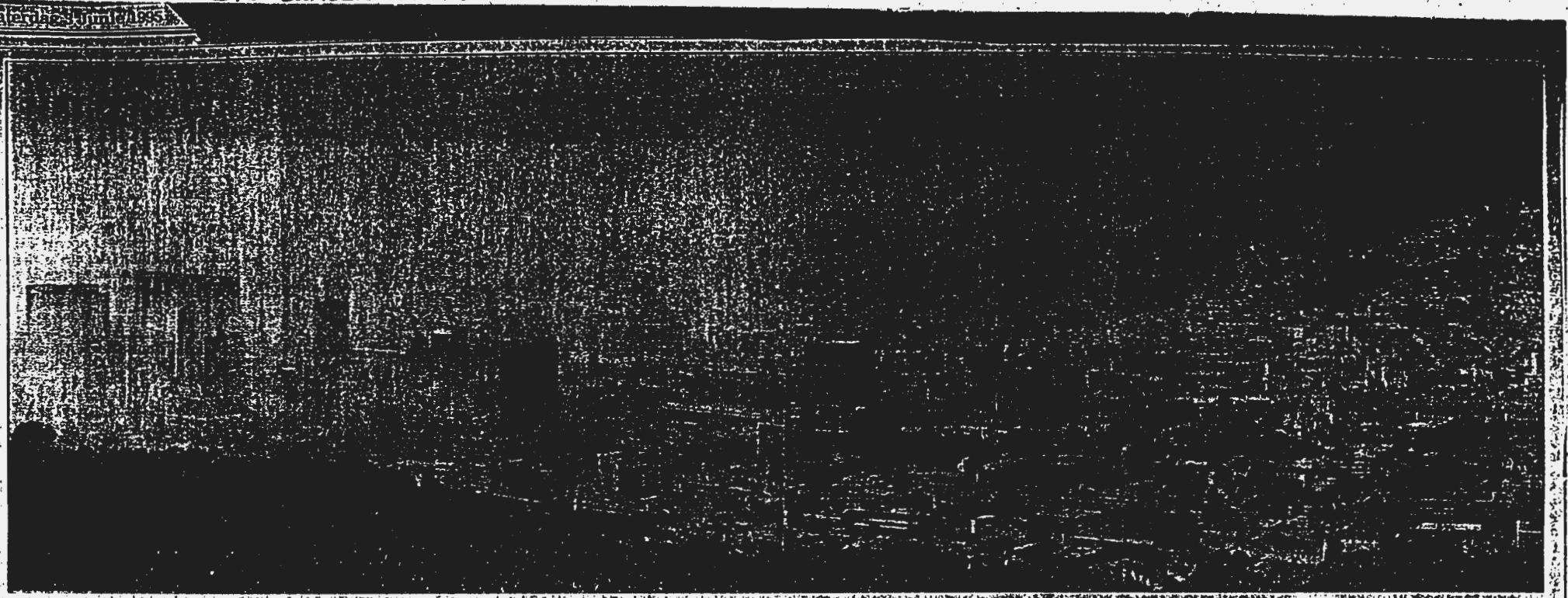
"The people burning it do so because they've got no choice, and probably as a result the Cape has one of the highest incidence of tuberculosis in the world."

Ms Laros said that while the sources of the brown haze are being studied nothing is being done to protect people from the accompanying health risks.

"Research projects like the one to locate the source of the brown haze and the one on air pollution in Milnerton are taking place but I'm not aware of anything being done pro-actively to reduce health risks or of studies being done to measure how the pollution affects our ability to survive."

The bottom line is that no one's sure what causes the smog, and that's what Professor Richard Dutkiewicz and his team from UCT's Energy Research Institute will be trying to establish between now and the end of next year.

DIE BURGER 3.6.95



Hoë besoedelingsvlak op windstil dag laat weer keel van menige inwoner van Kaap en voorstede toetrek

'n Geelbruin rookmis het gister weer oor Kaapstad en sy aanliggende voorstede gehang. Die besoedeling was só erg dat die Tafelbaailse hawe heeltemal deur die waas bedek was. Volgens 'n woordvoerder van die stadsraad se afdeling lugbesoedelingsbeheer is die internasionaal aanvaarbare vlakke van oksiede van stikstof oorskry. Teen 8 vm is 1 737 okstede van stikstof per kubieke meter lug gemeet. Die aanvaarbare vlak is 1 504 per kubieke meter. Teen 12 nm. is 226 stikstofokstede per kubieke meter lug gemeet. Die aanvaarbare vlak is 376 per kubieke meter lug. Dié verskynsel kom gereeld tussen April en September op windstil dae voor en hou met temperatuur-inversie verband. In sulke toestande los die besoedelingstowwe wat in die atmosfeer vrygelaat word, moeilik op en word dit gekonsentreer. Wetenskaplikes is nie seker oor die presiese samestelling van rookmis nie, en uitgebreide navorsing word tans hieroor gedoen. Dit sluit ontledings van olieraffinadery- en kunsmisgasse in, sowel as uitlaatgasse van motors. Die onooglike mis hou verband met die verspreiding en opname van lig deur gaspartikels. Die belangrikste van dié gasse is stikstofdioksied.

Foto: Gert Vosloo

ARGUS 21.9.95

Less 'brown haze' over Cape Town — experts

Environment Reporter

CAPE TOWN'S infamous "brown haze" appears to have been less prominent this year than last, say University of Cape Town scientists researching the problem.

The scientists, at UCT's Energy Research Institute, found a marked drop in the number of days on which NOX (oxides of nitrogen) levels exceeded the recommended health standard of 1 504 micrograms per cubic metre.

This happened on 27 days this year compared with 39 last year.

Institute professor Dick Dutkiewicz said the decrease in the brown haze occurrence was probably because of climatic conditions.

"The brown haze is particularly bad when nightly temperature inversions occur during winter months, but this has happened less this year."

The UCT researchers are continuing to sample emissions from all the major polluters in metropolitan Cape Town, including petrol and diesel vehicles, large industries and wood-burning.

Their sampling is focused on the small particles which are the main cause of the brown haze.

The results of their comprehensive study — expected at the end of next year — will quantify how much each of the major polluters contributes to the brown haze problem.

27-4-96

'96 9:45AM THE ARGURS LIB

Brown haze hanging over city is bad for your health

Staff Reporter

ARG : SAT

CALM conditions and a low lying temperature inversion layer yesterday caused air pollution levels in Cape Town to exceed standards laid down by the city health department.

Statistics released by the Cape Town City Council indicated the nitrogen oxide reading at 8am was 1 752 micrograms a cubic metre of air — well above the the recommended level of 1 504.

The nitrogen dioxide reading was 307 micrograms a cubic metre of air, slightly down from the 376 guideline.

The "brown haze" which hung menacingly over the city caused a number of people to phone the newspaper and complain.

An environmental health spokesman said the windless conditions coupled with the inversion layer were responsible for the high readings.

"The inversion layer trapped and concentrated the pollution which rose as the air warmed. And because of the sunny conditions, a photo-chemical reaction caused the pollution to become visible as brown haze."

C.T. 24.5.96

City smog levels cause for concern

THERE had been no improvement in the level of photochemical fog over Cape Town — which has been very evident recently — the Minister of Environment Affairs Dr Dawie de Villiers said yesterday.

Motor vehicle emissions had remained the same between April 30 last year and April 30 this year, although the number of motor vehicles had increased over this same period.

De Villiers, who was replying to a question tabled in the Senate by James Selfe (Democratic Party), said that a comprehensive study into all aspects of motor vehicle emissions was being carried out at present.

This study was expected to be completed by 1998, De Villiers said. — Political Staff

ARGUS 11.7.96

One of those bad air days browns off city

Health Reporter

COUGH, splutter, uggh! Something must be done about the air pollution.

If that was your reaction to the thick, brown haze over the city yesterday, you're not alone. Many readers phoned in to complain about pollution that hung like a dirty blanket over Cape Town early yesterday.

A city health department spokesman said yesterday's air pollution reading of 2 794 micrograms of nitrogen oxide per cubic metre of air was not "very high", although it did exceed the guideline of 1 504. Monday's reading was 2 101 and Sunday's reading 514.

The nitrogen dioxide reading yesterday was 344, below the 376 guideline.

Calm conditions and a low-level temperature inversion that trapped the pollution concentrated the brown haze early in the morning in a narrow band, making it look particularly bad.

Argus 7.8.96

'Beauty of the Cape our advantage – but get rid of the smog'

Metro Reporter

CAPE Town will have to clean up its smog – otherwise known as brown haze – if it wishes to be an Olympic city.

This was the view of Professor R K Dutkiewicz of the University of Cape Town's Energy Research Institute at the annual symposium of the National Association for Clean Air.

Professor Dutkiewicz was giving a progress report on the brown haze study which has been conducted in the city over the past 18 months.

The results of the study are likely to become available early next year after samples, which have been sent to the Desert Research Institute in Nevada in the United States, have been analysed.

With the help of the weather office, samples of some of the city's worst episodes of brown haze in spring and autumn were taken for the study.

Professor Dutkiewicz said there was no brown haze in Atlanta, and Cape Town would have to do something about this problem if it wanted the Olympics.

This did not leave much time to put the findings of the study into effect.

The study hopes to identify the main causes of the brown haze and to propose strategies to improve the air quality. A draft report is expected by January, he said.

Also on the Olympic theme, provincial finance and environmental affairs minister Kobus Meiring said the Western Cape should safeguard its natural heritage because this would give it an advantage in its Olympic bid.

Mr Meiring said that after visiting Atlanta, he believed Cape Town would be capable of hosting the bid. The two cities had similar populations, which also were spread out.

Atlanta did not have anything equivalent to the Newlands cricket or rugby grounds, and Centennial Park was "nothing compared to the Waterfront", he added.

"We have one very big advantage in the beauty of the Cape," he said.

C. Argus 14/15 June 1997

Day of reckoning dawns for polluters

Culprits smoked out – UCT study available soon

PIETER MALAN
STAFF REPORTER

Capetonians will soon know who the main polluters are behind the brown haze that blankets the city on windless days.

The long-awaited study pinpointing the exact sources of the air pollution will be available shortly.

The study, commissioned by local government and industry about three years ago and costing R450 000, should go a long way to settle the dispute over who's to blame.

The university Energy Research Institute began the study in 1994 and first "fingerprinted" all the major polluters in the Peninsula.

By comparing this information with data collected over a year between July 1995 and June last year, researchers hope to be able to tell exactly who contributes to the smog.

Researcher Mark de Villiers said the final report should be available by the end of next month and presented to the sponsors before being made public.

The sponsors include local municipalities and industries such as Caltex, Kynoch and SA Breweries. Some of these institutions have been accused of being major polluters.

As the study was expected to be specific – pinpointing culprits and detailing exactly how much they contributed to the overall problem – fear has been expressed that these industries could try to find fault with the study and delay its publication.

Mr De Villiers rejected this perception, saying the only objection industry could have against the findings was if they could show that the methodology the researchers had used was suspect.

He said the study used a model developed in the United States.

Similar research, using the same methodology, has been successfully conducted in American cities such as Los Angeles and Denver.

Mr De Villiers said the study was now in its final phase and researchers were waiting for the results of tests on samples sent to the United States.

"The study should clearly show where Cape Town is heading and give planners an idea of what action is necessary to alleviate the pollution problem in the city."

He said using the results received from the United States would also help planners to predict what would happen if vehicle traffic or industrial activity increased.

CAPE TIMES 1-10-97

Brown haze mostly caused by vehicles

MELANIE GOSLING
ENVIRONMENT WRITER

VEHICLE emissions are the major cause of Cape Town's unsightly "brown haze" — the blanket of polluted air that covers the city in autumn and winter, often rising above internationally accepted health limits.

This was the finding of a three-year study by UCT's Energy Research Institute which was released yesterday.

Institute director Professor Dick Dutkiewicz said vehicle emissions were responsible for 65% of the brown haze; industry 22% and domestic wood fires 11%. Dust and sea salt made up a negligible 2%.

Diesel vehicles were the main polluters, responsible for 48% of the brown haze, compared with 17% from petrol vehicles.

The city's air pollution is expected to increase by 50% in the next 10 years, and international limits will be exceeded more often for longer periods, he said.

Said Dutkiewicz: "This scenario is unacceptable for Cape Town. We all hate brown haze and the time has passed when we need to talk about it. In some cases laws already exist to curb it, but they are not enforced. If we do not do something concrete soon, we'll be sitting with an atmosphere as bad, if not worse, than most cities in Europe or the United States."

The study recommended the officials take immediate action by:

- Enforcing legislation to cut diesel black smoke emission.
- Enforcing legislation to cut black smoke emissions from industries.
- Discussing with the oil industry ways to improve fuel quality.
- Upgrading the air pollution control capacity of the Cape Metropolitan Council.
- Starting an air quality management system for the city.
- Re-assessing national air pollution control legislation which is outdated.

Dutkiewicz said the industrial pollution was from small industries scattered around the metropole.

He said emissions from the Caltex refinery and the Athlone power station did not contribute significantly to the brown haze as their chimneys were high and released emissions above the temperature inversion layer. It was this layer which "trapped" pollutants near the ground on still, cloudless nights in autumn and winter, creating the brown haze in the early mornings.

Legislation already exists in the Air Pollution Prevention Act of 1965 covering black smoke emissions from diesel vehicles and industry, but this is not properly enforced. Experts say legislation covering diesel vehicles is outdated, has loopholes and is hardly ever enforced.

The city council had had the equipment needed to measure diesel emissions on the spot, but it broke about 15 years ago and was never replaced. The CMC's air pollution control officer, Mr Hans Linde, confirmed the machine was broken.

"We never repaired it because we were promised new air pollution legislation about 12 years ago which would have made the equipment redundant. That legislation has never materialised," Linde said.

Head of CMC municipal health services Dr Mike Tatley said the CMC would put the report's recommendations into action.

One of the first moves would be to increase the air pollution management staff from eight to 13.

DIE BURGER 1·10·97

Dit is hoe dig die rookmis gereeld oor Kaapstad hang. Foto: Dick Dutkiewicz

Kaap 'gou nes Europa toegerook'

Waldo Müller

KAAPSTAD. – "As niks omtrent die bruin rookmis hier gedoen word nie, gaan die digtheid daarvan binne tien jaar met tot 50% toeneem. Onmiddellike optrede is nodig om dit te verhinder. Die tyd vir praat is verby."

Só het prof. Dick Dutkiewicz, hoof van die Energienavorsingsinstituut (ENI) aan die Universiteit van Kaapstad, gesê toe hy gister die bevindings van 'n twee jaar lange studie oor dié stad se rookmis aan die media bekend gemaak het.

"Die tyd vir daadwerklike stappe raak min. Ons word deur 'n situasie in die gesig gestaar waarin die Kaapse lug binnekort net so besoedel as dié van die groot Amerikaanse en Europese stede kan wees."

Die verslag wys voertuie en hul eienaars uit as die grootste sondaars agter die onooglike bruin mis wat veral tussen April en September sigbaar is. Sowat 65% daarvan kom van voertuie – 17% van petrol- en 48% van dieselaangedrewe voertuie.

Nywerhede, hoofsaaklik dié met laer skoorstene, is vir 22% van die mis verantwoordelik. Sowat 11% is van huishoudelike vure afkomstig. Natuurlike bronne soos stof en seesout speel net 'n geringe rol.

Monsters van die rookmis is tussen Julie 1995 en Junie 1996 in die middestad, Goodwood, Table View, Wynberg en Guguletu geneem.

Daar is bevind die rookmis is die digste in die middestad en Goodwood. Minder digte mis is by Table View gemeet, maar daar het nywerhede 'n groter rol in die besoedeling gespeel.

Dutkiewicz het gesê die rookmis bou soggens in die laer atmosfeerlae op, waarna dit styg en minder sigbaar word.

Hoewel die rookmisvlakke uurlikse gesondheidsriglyne tot 40 keer per jaar oorskry, word daaglikse en jaarlikse riglyne selde oorskry.

Luidens die verslag ontstaan die mis wanneer sterk temperatuurwisseling en windstil-toestande gesamentlik voorkom. Dit verhinder die opwaartse of seewaartse vloei van besoedelingstowwe wat van laagliggende bronne soos byvoorbeeld voertuie en fabrieke met lae skoorstene kom.

Huidige nasionale regulasies om lugbesoedeling te bestry is volgens Dutkiewicz erg verouderd, terwyl wette soos dié waarvolgens byvoorbeeld 'n vragmotor die pad belet kan word as hy te veel bruin rook vrystel, nie toegepas word nie.

In die verslag word aanbeveel dat diesel- en petrolvoertuie eerste aandag kry. "Rokende voertuie" is die groot oortreders en kan met behoorlike wetstoepassing heelwat verminder word.

Die navorsers vra dat 'n doeltreffende luggehaltebeheerprogram so gou moontlik ontwikkel word.

Vir die lang termyn word aanbeveel dat minder besoedelende brandstofsamestellings gevind word. In dié verband help loodvrye petrol egter nie om rookmis te bestry nie.

CAPE ARGUS, WEDNESDAY, OCTOBER 1, 1997

Urgent health alert as 'brown haze' worsens

Diesel main culprit, study finds

ANDREA WEISS
City Editor

Cape Town's air pollution problem is increasing to a point where international guidelines could be exceeded regularly, with serious health implications.

This is the view of researchers at the University of Cape Town, who have released the results of a study of "brown haze", the visible smog which plagues the city between April and September.

The results show that the main source of brown haze is diesel vehicles, with petrol vehicles, wood-burning and industrial boilers also being significant.

Brown haze forms when cold air is trapped beneath a layer of warm air during a temperature inversion, which makes it difficult for pollutants to disperse. The haze extends over most of the metropolitan area and is normally intense in the morning, lifting and dispersing later.

Brown haze consists mainly of particles smaller than 2,5 microns, which are harmful to human health.

UCT's Energy Research Institute, which did the research, warns that air pollution will grow to unacceptable levels unless action is taken soon.

Dick Dutkiewicz, who heads the institute, said the time for talk had passed, because the study had provided enough information to be acted upon immediately.

Professor Dutkiewicz said local authorities had the powers to enforce the control of diesel black smoke and industrial black smoke; but they had a capacity problem and were unable to police these areas properly.

"If Cape Town is serious about improving air quality and reducing the intensity of the brown haze, immediate action and longer-term planning is required.

"Immediate attention should be focused primarily on diesel vehicles, the largest single contributor to the brown haze," his report says.

Discussions should be held with the oil industry to reformulate fuel to make emissions safer.

The Cape Metropolitan Council should upgrade its air-pollution control capacity, and also initiate the development of an air-quality management system for Cape Town.

Cape Town's air pollution division should be expanded and qualified staff taken on. A budget should be allocated for monitoring and testing facilities, and the division should be given the power to enforce standards.

CAPE ARGUS, FRIDAY, OCTOBER 3, 1997

CMC to fight growing city air pollution

'Brown haze' alert

Chr Brown

The Cape Metropolitan Council intends to control a burgeoning air pollution problem threatening the health of residents and the tourism industry.

This follows the release of a report on Cape Town's "brown haze", which at times makes pollution in the city comparable to the worst in the world.

Brown haze develops mostly in winter when a temperature inversion traps pollutants below warm air.

Pierre Uys, chairman of the executive committee, said the council intended upgrading its air pollution control capacity to cover the whole metropolitan area.

Scientists indicated it was possible that primary emissions could increase by 48% over the next decade, which meant health standards would be exceeded much more frequently if nothing was done.

The brown haze study, carried out by the University of Cape Town's energy research unit, found that the main culprits were vehicles, particularly those with diesel engines, industry and wood burning.

Achmat Ebrahim, executive director with the metropolitan council, said: "This is air pollution at its worst and is not only an environmental problem but a health hazard as well."

He said the Cape metropolitan area was lucky that pollution lasted only a few hours a day and generally occurred only in winter but the brown haze episodes were comparable to some of the world's worst.

The council will also:

- Appoint five additional environmental health officers
- Establish a working group involving scientific services and the health department to ensure integrated pollution control
- Develop an air quality management system for the region
- Work as an advisory body helping municipalities across the metropolitan area.

Mr Uys said that through an integrated strategy and policy, the council would be able to achieve a lot more in dealing with the endemic pollution.

The study had clearly defined the nature of the problem and what should be done about it.

The council would ultimately initiate evaluation, control and enforcement measures, but it would be up to every citizen to do whatever was necessary to limit the problem.

We're doing our best to clean up environment – Caltex

ARGUS 6.10.97

Your leading article (Cape Argus, September 30) was right to warn of the danger of failing to take timely action on environmental problems.

Likewise, in his letter in the same issue, Andrew North of UCT was right to emphasise the costs of improved environmental quality and the explicit economic trade-offs.

Having spent more than R200-million in the last few years on environmental improvement technology at our Milnerton refinery, with a further spending of R65-million in the pipeline, we at Caltex are acutely aware of these points.

However, I regret that both you and Mr North err in referring to Caltex as "reneging on pollution control promises".

The above expenditures are major evidence to the contrary, and have enabled us to achieve significant reductions in refinery emissions since 1993. In only one area will we fall short of the demanding target we set ourselves in 1994. We then expected to be able to reduce sulphur dioxide emissions by 80% by 1999: now, for reasons not entirely within our control, we expect to achieve only a 60% reduction by that year.

Even so, I submit that halving the emission of SO_2 has been a major contribution in reducing atmospheric pollution in the area, and hardly warrants the blanket charge of "reneging".

Furthermore, we remain committed to a policy of continuous improvement in our environmental performance.

The "brown haze" study recently completed by UCT's energy research institute shows that almost two-thirds of the haze is caused by vehicle emissions, with industry accounting for only just over 20%.

The industrial pollution is mainly caused by small industries, not by our refinery (or the Athlone power station), whose emissions are released from tall chimneys above the temperature inversion layer which traps pollutants near the ground.

As an oil company, we of course also accept the need to look for ways for improving fuel quality, although it is quite clear that the problem is less one of fuel quality per se, and more the lack of enforcement of controls over poorly maintained vehicles.

Our major fuel quality improvement in recent years has been the introduction of unleaded petrol (which required substantial investment by the country's refiners).

While unleaded petrol brings environmental benefits in its own right, it is (or should be) only half the story.

Unleaded petrol is the essential prerequisite to fitting cars with catalytic convertors which can dramatically reduce or eliminate noxious compounds in vehicle exhausts. In the US, Europe, Japan and other countries, all new cars have been so fitted for several years, with mandatory periodic checks to ensure their continued correct functioning.

As yet, no new cars in South Africa are required to be fitted with catalytic converters.

Until they are, we are letting pass one major way of improving the quality of the air we breathe and, concurrently, we are not realising the full benefits of the investment in unleaded petrol.

This is one of the economic trade-offs to which Mr North referred, improved environmental performance at the cost of higher new-car costs.

And in reply to DP councillor I Iversen's letter (Cape Points, October 1) – regrettably, like many local politicians wanting to be seen to be on the "right" side of a "popular" issue like the environment, he has made the mistake of rushing into print before checking whether the facts as given in the press represent the whole story.

His accusation that we care more about profits than the health of our neighbours is rubbish.

Politicians themselves are quick to blame a lack of resources for their failures to meet basic human needs.

Clearly he also did not bother to acquaint himself with the brown haze study and I would refer him to the above-mentioned facts.

I would be happy to listen to Mr Iversen's criticisms, and proposed remedies, if he in return would be willing to give us the time to tell him in detail what Caltex has done and what it intends to do.

Perhaps he would like to telephone me on 403 7474.

Colleen Channon
Division Manager: Corporate Affairs
Caltex Oil SA
Cape Town

MONDAY PAPER OCT 6-13, 1997 (UCT)
VOL 16 NO 29

Vehicles largely responsible for city's 'brown haze'

The principal source of Cape Town's unsightly "brown haze" is vehicles, which cause over half the pollution, a three-year study by UCT's Energy Research Institute (ERI) has found.

Industry is the next most significant cause, followed by woodburning. Natural sources such as wind-blown dust and sea salt were found to contribute little towards the unsightly condition which has been the cause of increasing concern because of its impact on Cape Town's natural beauty and its potential health effects.

Until recently the causes of the brown haze were unknown, but in 1992 a pilot project conducted by the ERI indicated that the problem was complex and a major study was required to determine its cause. In 1995 the Cape Town Brown Haze Study, funded by local municipalities, local industy and the national govenment, was initiated.

The main objective of the Study was to determine the contibution of major polluters to the brown haze which occurs mostly from April to September and is most intense in the morning before dispersing later in the day.

The haze is caused by strong temperature inversions and windless conditions that occur during the winter months. These conditions prevent air pollutants from dispersing upwards or out to sea, leading to the build-up of pollutants emitted into the atmosphere. Because of the level of the inversion layer the Study found that industries with tall chimneys such as the Caltex oil refinery and the Kynoch fertilizer factory, which emit pollutants above the inversion layer, contribute little to the brown haze.

The Study used an approach that required "fingerprinting" both the suspected air pollutants and the brown haze itself. The haze was sampled from July 1995 to June 1996 at City Hall, Goodwood, Table View and Wynberg. In addition to particulate sampling, ongoing continuous measurements of a number of air pollutants and meteorological parameters were taken at the four sites. The integration of all this information enabled researchers to quantify the contribution of major polluters to the brown haze.

The Study found the intensity and causes of the brown haze vary with time and location due to the uneven distribution of the sources of the haze and the different meteorological conditions in various parts of Cape Town.

"Due to the unique meteorological patterns in Cape Town, the haze is usually very intense for only a few hours. Hourly internationally accepted air pollution health standards are therefore sometimes exceeded in Cape Town, but daily and annual health guidelines are rarely exceeded," said researcher on the project, Mr Mark de Villiers.

This is however not likely to remain the case unless urgent steps are taken to improve air quality in Cape Town. Based on projections of vehicle, population and industrial growth, the Study found that the intensity of Cape Town's unsightly brown haze will increase by 48% over the next decade if steps are not taken to stop it.

"It is also likely that health standards will be exceeded with increasing frequency over the next decade. This type of scenario is unacceptable for Cape Town, and efforts need to urgently be directed at improving air quality. Both immediate action and longer term planning are required," said Director of the ERI, Professor Dick Dutkiewicz.

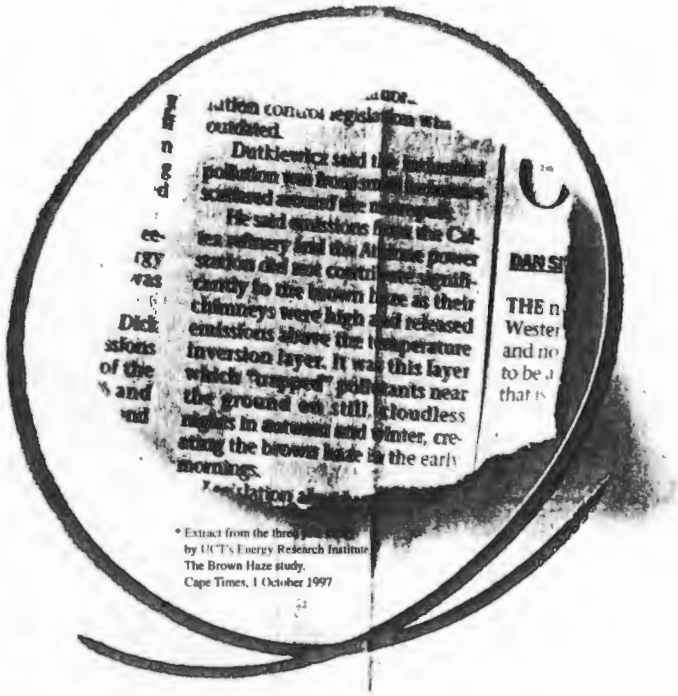
"In order of priority, immediate action should be focused on diesel vehicles, petrol vehicles and industry. Legislation already exists for black smoke emissions from diesel vehicles and industry. Proper enforcement of this legislation will significantly cut air pollution from the worst emitters. Smoking petrol vehicles produce many times more pollution than well maintained petrol vehicles, and therefore efforts should be directed at eliminating smoking vehicles. In the longer term consideration should be given to improved diesel, petrol, and fuel oil formulation in order to reduce emissions," he said.

In the longer term Prof Dutkiewicz believes an integrated air quality management system needs to be developed for Cape Town. At the heart of the system should be an ongoing process of planning, implementing, and assessing emission reduction measures.

"Medium and long term air quality targets should be set, and revised periodically. The system should include setting of relevant ambient air quality standards, development and updating of an accurate emissions inventory, improving the air quality monitoring system, as well as increasing public awareness. A start to the development of the integrated air quality management system should be made immediately," he said.

At present responsibility for managing Cape Town's air quality lies primarily with the Health Department of the Cape Town Metropolitan Council. However, this Department does not have the manpower, resources, or influence to adequately enforce current legislation, to adequately examine air quality data, or to ensure that air quality is optimally integrated within metropolitan planning. Unless these shortcomings are addressed immediately, little improvement in air quality control can be expected.

-- CAPE ARGUS 9.10.97



* Extract from the thesis by UCT's Energy Research Institute
The Brown Haze study.
Cape Times, 1 October 1997

The Brown Haze study also shows that contributions to the brown haze can be broken down as: vehicle emissions 65%; industry (particularly those that emit pollutants at low height) 22%; wood burning 11% and natural sources 2%.

Here are some more facts to clear the air.....

Since the end of 1993, the Caltex Refinery has spent almost R200 million on new technology and operational equipment to reduce emission levels. This includes a plant which is capable of producing environmentally friendly unleaded fuel at a cost of R130 million.

In 1994, Caltex undertook to achieve significant emission reductions at the Refinery within five years, including the reduction of sulphur dioxide emissions by 80%. With two years still to go, Caltex has already:

- **Reduced its sulphur emissions by over 50% since the end of 1993.**
- **Installed world class technology designed to reduce dust emissions by 90% at a cost of R20 million.**
- **Commenced the installation of a new gas firing boiler at a cost of R30 million which will reduce soot.**

Caltex also plans within the next three years:

- **To spend another R65 million to reduce sulphur emissions further.**
- **To install two new ground level monitoring stations.**
- **To continue to strive for improved environmental performance.**

Caltex is using the stringent World Health Organisation guidelines to serve as a basis for regulating sulphur dioxide emissions.

Caltex is still committed to negotiating a legally binding Good Neighbour Agreement with the community.

CALTEX

COMMITTED TO CONTINUOUS IMPROVEMENT

C. ARGUS 20.10.97

CAPE POINTS

WRITE TO THE EDITOR AT:
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The clean air debate continues – with more culprits

The letter from Jean Welsh (Cape Argus, October 17) gives a misleading impression on one specific point, namely that the most hazardous emissions from diesel-powered motor vehicles are nitrogen oxides and carbon monoxide.

These gases may be emitted in the greatest concentrations from diesel exhausts in South Africa, where catalytic afterburners are not compulsory, but in Europe, where they are, by far the greatest hazard is from the microscopic carbon particles which are emitted, whether or not afterburners are installed. The hazard is to the lungs.

In European cities, where there are far more diesel-powered cars than here in South Africa, these carbon particulates, the size described by the buzzword "pm2,5", present by far the greatest health hazard.

Until recent years, it was thought that pm10 carbon particulates were the greatest health hazard, but epidemiological evidence demonstrates otherwise.

Problems arise with filtering out these particulates from vehicle exhausts – the fineness of the filter that would be required would produce so much resistance to the exhaust flow that the resulting back-pressure would prevent diesel engines from running efficiently, if at all.

In the case of mines, where diesel-powered vehicles and locos are used in the confined underground workings, the hazard is reduced by vast fresh-air flows.

R M Longden-Thurgood
Milnerton

My previously published letter on the subject of lead-free petrol and its contribution to brown smog was viewed by some as negative and even confusing. I had failed to address the solution to the problem. Fair comment.

A low volume of fully imported vehicles, inter alia Alfas, Peugeots and Renaults, arrive here in European Community guise, with catalytic converters.

These vehicles are dependent on a diet of lead-free, as even a small dose of the leaded variety of petrol would "kill their cats". That's a fact, no argument.

This small band of principled motorists contribute to the reduction of exhaust emissions and point the way to a clearer future.

Two things distress me in particular: those manufacturers who advise customers to use lead-free petrol knowing there is no converter to clean up the mess at the back; and the length of time it will take before all vehicles are capable of using lead-free and are fitted with effective catalytic converters.

Legislation to make "cats" compulsory on new vehicles is probably five years off and who knows how long it will be before the majority of lead-addicted motors go to the scrapyards?

Granted, "cats" can be retro-fitted to the present "green-sticker" models, but at what cost and inducement?

A reduction in licence fee on production of a current test certificate?

British experience indicates a service life of 50 000km for a converter, which means that we will be paying a lot more for the things than we now pay for premium-grade tyres.

Rumbles from the motor trade on the Reef indicate that the 92 octane of unleaded petrol up there is causing problems.

The reported cost of raising the octane rating for Highveld consumption is said to be astronomical.

Can you blame me for ducking the issue first time around?

Motorised vehicles probably account for less than a quarter of our brown smog.

What is being done about the belching chimneys of industry, who leave it to the night shift to do the dirty work?

John Wilmot
Durbanville

AER PURUM HABERE

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October 1997

REPORT ON
CAPE TOWN BROWN HAZE STUDY

The following report has been prepared by Professor R Dutkiewicz and Mark de Villiers of the Energy Research Institute (tel. 021 705 0120).

The major source of the Cape Metropolitan area's brown haze problem is vehicles which are the cause of 65% of the brown haze according to results undertaken over the past two years by the Energy Research Institute of the University of Cape Town.

The report identifies where and when the haze occurs, what causes the haze and to what degree each source is responsible for the problem.

It recommends action steps that should be taken in the short and long term to improve the quality of air in the Cape Metropolitan area and estimates the future scenario for Cape Town is if these steps are not taken.

CAUSES

The results of the study also show that:

* *Diesel vehicles are the main source responsible for almost half of the major source of the haze due to their high emission rate of small particles.*

* *Industry, particularly those industries that emit pollutants at low height, is responsible for 22% of the brown haze.*

* *Natural sources - wind-blown dust and sea salt - contribute very little towards the brown haze.*

The report says that small particles are the single largest cause of the visible brown haze and that these can be harmful to human health. Because of this the main focus of the study was to quantify small particle contributions made to the brown haze by major pollutors.

OCCURRENCE

Over a year from July 1995 to June 1996 the brown haze was sampled at sites in the City Hall, Goodwood, Tableview and Wynberg in the Cape Metropolitan area. A single sample was also taken at Guguletu.

Filters were analysed to produce a "chemical fingerprint" of the brown haze itself as well as the "chemical fingerprint" of major air pollutors.

The report indicates that the intensity and causes of the brown haze vary with time and location due to the different meteorological conditions in various parts of Cape Town and uneven distribution of the sources.

The haze occurs mostly from April to September when strong temperature inversions combined with windless conditions prevent air pollutants from dispersing upwards or out to sea, leading to the build-up of pollutants emitted into the atmosphere.

AREA OF POLLUTION

The haze extends over most of the Cape Metropolitan area and is normally most intense in the morning, lifting and dispersing later in the day.

Results show that:

* *The brown haze is usually very intense for only a few hours. Hourly internationally accepted air pollution standards are therefore sometimes exceeded, but daily and annual health guidelines are rarely exceeded.*

* *The brown haze is most intense at Goodwood, followed by the City Centre where pollution from motor vehicles was more significant than elsewhere.*

* *A less intense haze was measured at Tableview where the "chemical fingerprint" showed that industry played a more significant role.*

* *At Guguletu, wood burning was more significant than at any other sites.*

FUTURE SCENARIO

Based on projections of vehicle, population and industrial growth in Cape Town, the report estimated that if nothing is done about the brown haze, then the intensity of the brown haze will increase by 48% and health standards will be exceeded with increasing frequency over the next

decade.

This scenario is unacceptable for Cape Town. Effort needs to be urgently directed at improving air quality through both immediate planning and long-term action.

RECOMMENDATIONS

In order of priority, the report recommends that immediate action should be focused on diesel vehicles, petrol vehicles and industry.

Legislation already exists covering black smoke emissions from diesel vehicles and industry, but proper enforcement of this legislation will be needed to significantly reduce air pollution from the worst offenders.

The report notes that smoking petrol vehicles emit much more pollution than well maintained petrol vehicles, so efforts should be directed at eliminating smoking petrol vehicles.

In the longer term, consideration should be given to improved diesel, petrol and fuel formulation in order to reduce emissions.

The report notes that responsibility for managing Cape Town's air quality lies primarily with the Municipal Health Services of the Cape Metropolitan Council, but that at present this department has neither the manpower, resources nor influence to adequately enforce current legislation. Nor can the Department adequately examine air quality data, nor ensure that air quality is optimally integrated within metropolitan planning.

The report warns that unless these shortcomings are addressed immediately, little improvement in air quality control can be expected.

IMMEDIATE ACTION

Immediate action is recommended in the report as follows:

* *Enforce the diesel black smoke legislation*
* *Introduce measures to reduce the number of smoking petrol vehicles.*
* *Initiate discussions with the oil industry about improving fuel quality.*
* *Initiate the upgrading of air pollution control capacity of the Cape Metropolitan Council.*
* *Initiate the development of an air quality*

management system for Cape Town.

* *Re-assess existing national air pollution legislation, since much of it is outdated.*

LONGER TERM RECOMMENDATIONS

In the longer term, the report recommends that:

* *An air quality programme needs to be developed for Cape Town. At the heart of the programme should be an ongoing process of planning, implementing and assessing emission reduction measures.*

* *Medium and long term air quality targets should be set, and revised periodically.*

* *The programme should include setting relevant ambient air quality standards, development and upgrading of an accurate emissions inventory, improving the air quality monitoring system, as well as increasing public awareness.*

* *An immediate start should be made on developing an integrated air quality management programme.*

BACKGROUND TO THE REPORT

Cape Town's brown haze problem has been of increasing concern over recent years because of its impact on Cape Town's natural beauty and its potential effects on health.

In 1992 a pilot project indicated that the problem was complex and a major study was required to determine the causes of the brown haze.

The Cape Town Brown Haze Study was initiated in 1995, funded by local municipalities, industry and the national government.

The study was carried out by the Energy Research Institute of the University of Cape Town which has been involved with environmental research for over three decades.

REPORT NO. INT 229

CAPE TOWN BROWN HAZE STUDY
SUMMARY OF PUBLICITY

M G DE VILLIERS DECEMBER 1997

ENERGY RESEARCH INSTITUTE